

Gait Improvement in Children with Cerebral Palsy after Myofascial Structural Integration Therapy

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BACKGROUND: Cerebral palsy (CP) is a disorder of movement, tone, and posture. Though caused by a non-progressive central nervous system injury, secondary structural changes in muscle and fascia contribute to stiffness. Myofascial Structural Integration (MSI) is a manual therapy that manipulates soft tissues to loosen the fascial layers, reduce stiffness, and facilitate improved alignment.

METHODS: Twenty-eight children 4 years and under with mild-moderate spastic hemiplegic CP were enrolled in a randomized control trial. Nine children were ambulatory and their gait was analyzed in a case series. We classified these children with hemiplegia (n=7) and diplegia (n=2), GMFCS Level 1 (n=7), and Level II (n=2). Four additional children began walking during the study but were not included in this analysis. All children received the study treatment – a course of MSI performed by one clinician. Children were assessed at three-month intervals (+/-1 month) for one year. Assessments were performed on the GAITRite® mat, an electronic walkway in which pressure sensitive receptors record spatial and temporal gait parameters. Data were analyzed with paired t-test analyses.

RESULTS: Foot length (proxy for foot contact on the mat) on the affected limb increased significantly for the pooled sample from pre- to post-treatment (M=12.5) (SD=2.19) and (M=13.0) (SD=2.54), p=.02. No significant change was seen from enrollment to pre-treatment (M=12.3) (SD=2.24) and (M=12.5) (SD=2.19), p=.46. Changes were maintained at maintenance assessment (M=13.2) (SD=2.46), p=.92. The effect was greatest in children with hemiplegia. A reduction in heel-to-heel base of support between pre-treatment and post-treatment intervals approached statistical significance (M=11.5) (SD=1.90) and (M=10.2) (SD=3.10), p=.06. There was no change in heel-to-heel base of support between enrollment and pre-treatment assessments, and the change was maintained. No change was seen in foot width, step length, double stance time or velocity between any time points.

CONCLUSION: Efficient and safe walking is a frequent treatment goal for ambulatory children with spastic CP. MSI treatment was associated with increased foot length on the affected side and a trend toward reduction in heel-to-heel base of support. We interpreted increased foot length on the affected side as an increase in the amount of contact with the mat, reduction in toe walking, and progress toward heel strike. This change was maintained three months after treatment ended. These data suggest that MSI may improve selected aspects of gait in ambulatory children with spastic CP.

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